

Claims

1. An air filtration cartridge suitable for use in the treatment of air in a forced airflow air supply system having an air supply conduit provided with an in-line filtration
5 cartridge mounting formed and arranged for releasably mounting a replaceable air filtration cartridge so that the air supply is passed through said cartridge, said cartridge comprising a casing having: an upstream stage defining a chamber having an inlet for receiving a said forced airflow,
10 in use of the cartridge, and an outlet, and mounting, inside said chamber, at least one low power coronal discharge ozone generator, said at least one ozone generator being formed and arranged for generating a restricted concentration of ozone and any other reactive species formed together therewith,
15 within an inactivating zone contained within said cartridge, through which said air flow is passed in use of said cartridge, which restricted concentration is sufficient effectively to inactivate airborne pollutant material entrained in said air flow, yet which restricted
20 concentration decays sufficiently outside said inactivating zone so that the concentration of ozone in the cleaned air expelled from said cartridge, preferably from said upstream stage thereof, is at a physiologically acceptable level without the use of an ozone decomposition catalyzer; and a
25 downstream stage coupled to said upstream stage outlet and formed and arranged for mounting, in use of the cartridge, a high airflow electrostatic filter.
2. The cartridge of Claim 1 wherein said low power corona
30 discharge ozone generator comprises a low power corona discharge device provided with a low power high voltage output transformer.
3. The cartridge of Claim 2 wherein the low power corona
35 discharge device comprises concentric tubular metal gauze

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electrodes separated by a tubular strengthened glass dielectric.

4. The cartridge of Claim 3 wherein the glass dielectric is
5 of titanium dioxide strengthened borosilicate glass.

5. A cartridge according to any one of claims 1 to 4 wherein
the low power corona discharge ozone generator has a power
rating of from 4 to 50 watts.

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6. A cartridge according to any one of claims 1 to 5 wherein
is provided an array of ozone generators distributed across
the airflow path through said upstream stage.

15 7. A cartridge according to any one of claims 1 to 6 wherein
said downstream stage filter mounting has a depth of from 5
to 50 cms.

8. A cartridge according to any one of claims 1 to 7 wherein
20 said at least one inlet is fitted with at least one filter.

9. A cartridge according to claim 8 wherein is provided at
least one inlet filter for removing smoke.

25 10. A cartridge according to any one of claims 1 to 9 wherein
said downstream stage includes an annular air reservoir
extending around a filter housing for said high airflow
electrostatic filter, downstream of said filter, for the
purpose of ensuring that the flow of air back into the
30 aircraft air recirculation system is substantially
unrestricted.

11. A cartridge according to any one of claims 1 to 10
wherein are provided seals formed and arranged for ensuring
35 the forced airflow is directed through said upstream and
downstream stages of the cartridge.

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12. A cartridge according to any one of claims 1 to 11
wherein said filter mounting has a said high airflow
electrostatic filter mounted therein.

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13. A cartridge according to claim 12 wherein said filter is
in the form of a stack of filter elements.

14. A method of cleaning air without the use of an ozone
10 decomposition catalyzer, comprising the steps of:
providing a cartridge according to claim 1 with a said high
airflow electrostatic filter mounted in the filter mounting
thereof;
powering the ozone generator of said cartridge so as to
15 generate ozone in the inactivation zone of said cartridge;
and passing a flow of said air through said inactivation zone
and then through said filter.

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